

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 1 072 487 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
31.01.2001 Bulletin 2001/05

(51) Int. Cl.⁷: B60R 25/04, B60R 25/02

(21) Application number: 00116318.7

(22) Date of filing: 27.07.2000

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: Luca', Rosario
10129 Torino (IT)

(74) Representative:
Quinterno, Giuseppe et al
c/o JACOBACCI & PERANI S.p.A.
Corso Regio Parco, 27
10152 Torino (IT)

(30) Priority: 30.07.1999 IT TO990672

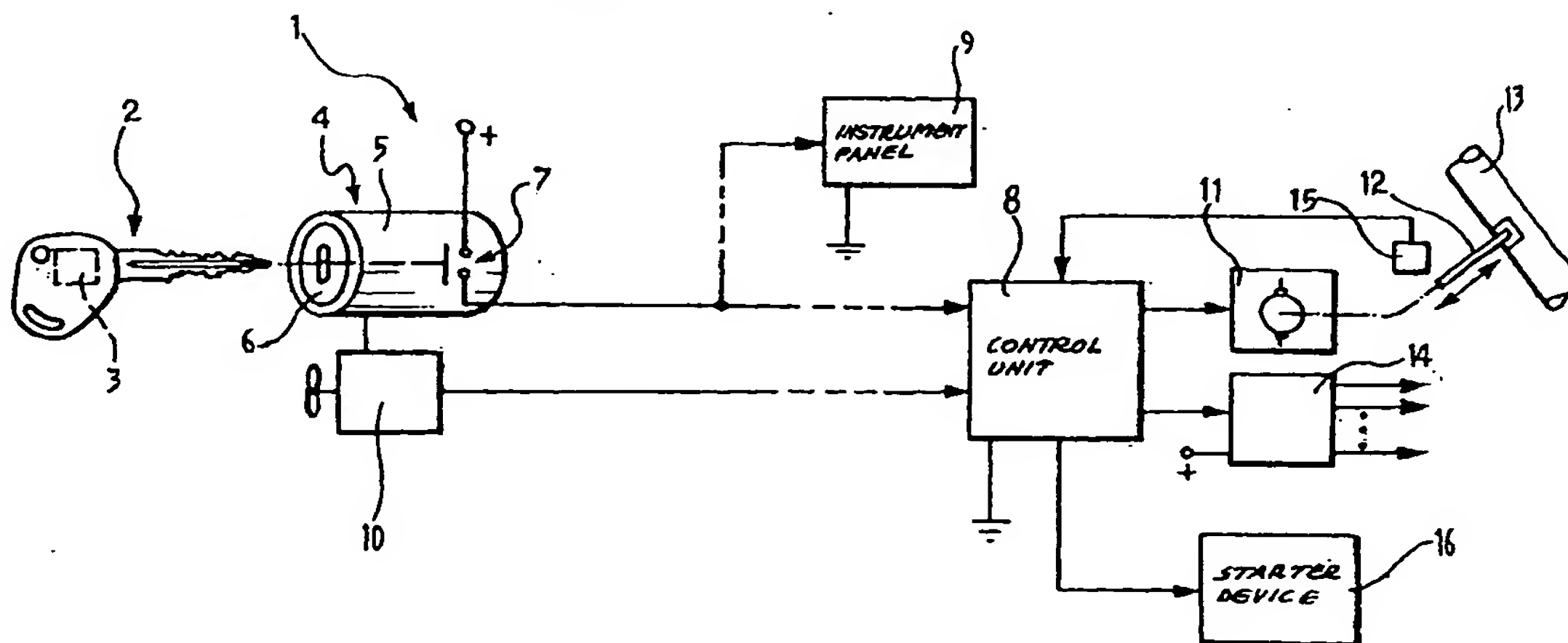
(71) Applicant: FIAT AUTO S.p.A.
10135 Torino (IT)

(54) A system for enabling the use of a motor vehicle

(57) The system comprises: a locking device (12) associated with the steering column (13) and activated and deactivated by means of an electrically controlled actuator (11), an electric energy distributor enabled to operate by means of an electric enabling signal, a detector (10, 10') operable to detect an identification code associated with a portable device (2, 2'), a manually operable electrical supply switch (7), and an elec-

tronic processing and control unit (8) arranged to control the actuator device (11) to deactivate the steering lock device (12) and provide an enabling signal to the distributor (14) when the said electrical switch (7) is closed and the detected identification code corresponds to a predetermined code.

FIG. 1



EP 1 072 487 A1

Description

[0001] The present invention relates to a system for enabling the use of a motor vehicle.

[0002] In order to allow the proprietor or other authorised persons to use a motor vehicle, and to prevent theft, a conventional arrangement provides for the use of mechanical steering lock anti-theft devices which are manually activated and deactivated by means of the vehicle's ignition key. In relatively more recent times, for greater security, the ignition and starting key has been provided with a device carrying an identification code capable of being detected by a detector device associated with the ignition and starter switch, to enable or disable the starting of the vehicle in dependence on whether or not the code is recognised.

[0003] These arrangements, although effective, have the disadvantage of requiring a rather bulky and heavy combined ignition switch, steering lock and code recognition unit. These arrangements also have the disadvantage of requiring these units to be located close to the steering column.

[0004] The present invention seeks to provide a system for enabling the use of a motor vehicle which allows the disadvantages and inconveniences of the prior art arrangement to be overcome.

[0005] This and other objects are achieved according to the invention by a system the salient characteristics of which are defined in the annexed Claim 1.

[0006] Further characteristics and advantages of the invention will become apparent from the following detailed description given purely by way of non-limitative example with reference to the attached drawings, in which:

Figure 1 is a block diagram of a system for enabling the use of a motor vehicle according to the invention; and

Figure 2 is a block diagram of a variant embodiment.

[0007] In Figure 1 the reference numeral 1 generally indicates a system according to the invention for enabling the use of a motor vehicle. This system comprises a key 2 in which is incorporated, in a manner known per se, a device 3 carrying an identification code.

[0008] The key 2 can be introduced into a switch 4 comprising a stator 5 and a rotor 6 turnable by means of the key.

[0009] Turning the rotor 6 by means of the key 2 causes closure of an electric switch 7 incorporated in the switch to connect the positive pole of the battery on board the motor vehicle to a supply input of the electronic control unit 8.

[0010] The switch 7 is further able, when closed, to provide supply voltage to the instrument panel 9 located in the motor vehicle dashboard.

[0011] The switch 4 has associated therewith a

detector device 10 of type known per se, operable when the key 2 is inserted into the said switch to "read" the code memorised in the device 3 associated with this key. The detector device 10 is connected to an input of the control unit 8 which, after closure of the switch 7, is able to verify if the detected code corresponds to a predetermined identification code.

[0012] In the case of positive recognition of the detected code, the control unit 8 commands an electric actuator 11, such as an electric motor, associated with a movable locking member 12, such as a bolt, to cause this latter to move from an active position (shown in Figure 1) in which it prevents rotation of the steering column 13, to an inactive position in which steering is allowed.

[0013] Following positive recognition of the identification code, the control unit 8 is further arranged to provide an enabling signal to a distributor device 14 the input of which is connected to the on-board battery and which has a plurality of outputs for the supply of various electrical loads and devices on board the motor vehicle.

[0014] Conveniently the locking member 12 has an associated position sensor 15 operable to provide the control unit 8 with a signal when the locking member 12 is in the inactive position. In the presence of this signal the control unit 8 emits a signal enabling the activation of a starter device 16 associated with the internal combustion engine of the motor vehicle.

[0015] The system for enabling the use of a motor vehicle described above with reference to Figure 1 has numerous advantages. In the first place the location of the switch 4 and the associated detector device 10 is released from the need to be located close to the steering lock device. This allows a greater freedom in design and gives advantages of greater ergonomic possibilities for the actuation of the switch.

[0016] A further advantage lies in the drastic structural simplification of the switch, which is no longer required to perform the electric distribution functions and the mechanical actuation of the steering lock device.

[0017] In Figure 2 there is shown a variant embodiment of the invention. In this figure the parts and elements already described have again been attributed the same reference numerals.

[0018] The system according to Figure 2 comprises a detector device 10' capable of detecting a code stored in a portable device 2', such as an magnetic or electronic card of passive or active type.

[0019] The detector device 10' is in particular arranged to allow detection of the code when the portable device 2' is located within a predetermined field outside the motor vehicle.

[0020] In the passenger compartment of a motor vehicle in an ergonomically convenient location, there is disposed a manually operable electric switch 7 for connecting the voltage source (on-board battery) to the supply input of the control unit 8 and possibly to the

instrument panel 9.

[0021] When the control unit 8 is supplied and verifies that the code detected by the device 10' corresponds to a predetermined code it commands the actuator device to operate the release of the steering and enables the electric distributor 14. 5

[0022] As in the case of the system according to Figure 1, when the sensor 15 signals to the control unit 8 that the locking member 12 associated with the steering column 13 has reached its inactive position the control unit 8 can enable activation of the motor vehicle's engine starter device. 10

[0023] Naturally, the principle of the invention remaining the same, the embodiments and details of construction can be widely varied from those described and illustrated purely by way of non-limitative example, without by this departing from the ambit of the invention as described in the annexed claims. 15

Claims

20

1. A system for enabling the use of a motor vehicle comprising,

a mechanical locking device (12) associated with the steering column (13) and activated and deactivated by an electrically controlled actuator (11), 25

electrical energy distribution means enabled to operate by means of an electrical enabling signal, 30

detector means (10, 10') operable to detect an identification code associated with a portable device (2, 2'),

a manually operable electrical supply switch (7), and 35

electronic processing and control means (8) connected to the said switch (7), to detector means (10, 10') to the said actuator (11) and to the distribution means (14), and arranged to control the said actuator device (11) to deactivate the steering lock device (12) and provide an enabling signal to the distributor means (14) when the said electric switch (7) is closed and the identification code detected corresponds to a predetermined code. 40 45

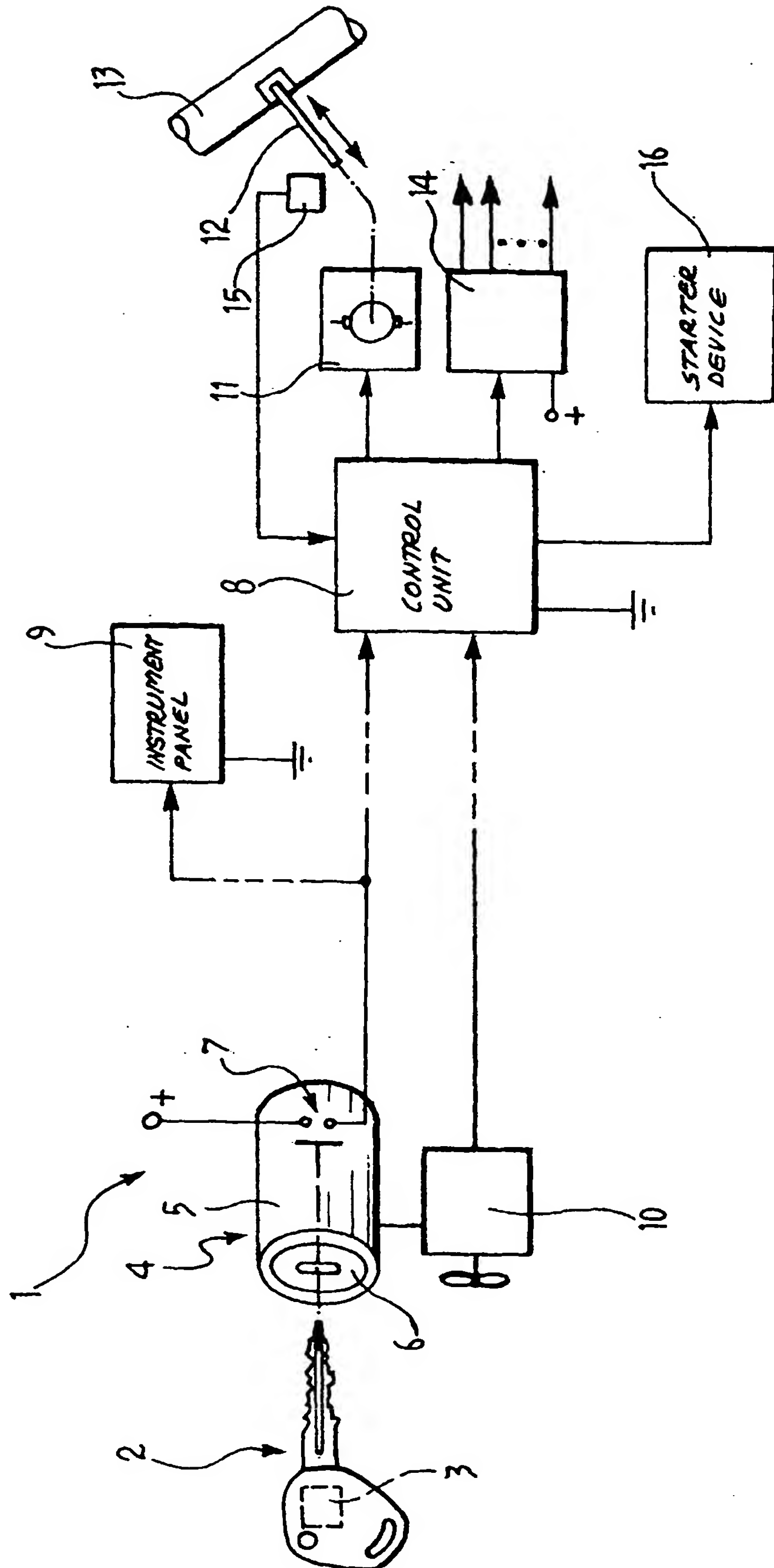
2. A system according to Claim 1, in which the said portable device (3) with which the identification code is associated is incorporated in a key (2), and the said electric switch (7) and detector means (10) are associated with a receiver part (4) which can be engaged and actuated by means of the said key (2). 50

3. A system according to Claim 1 in which the said portable device (2') is operable to allow detection of its identification code by the detector means (10') within a predetermined field outside the motor vehi- 55

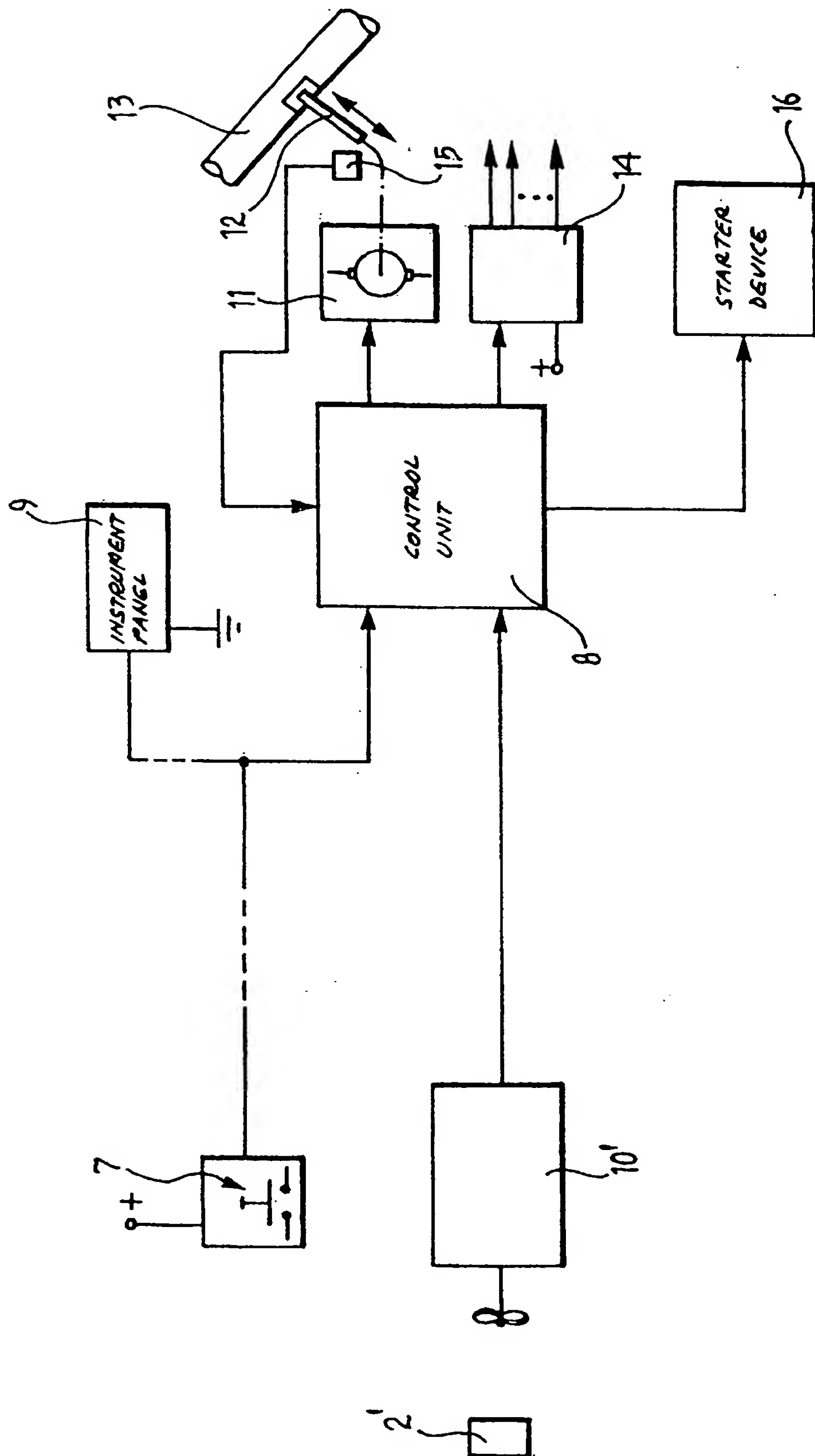
cle.

4. A system according to any preceding claim, in which the locking device associated with the steering column (13) comprises a locking member (12) displaceable between an active position and an inactive position in which it respectively prevents and allows steering movement; the system further including a sensor (15) operable to provide an enabling signal to electronic processing and control means (8) when the said locking member (12) is in the inactive position; the said processing and control means (8) being arranged to allow activation of a starter device (16) of the motor vehicle only when the said sensor (15) provides the said enabling signal.

FIG. 1



216.





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 11 6318

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	FR 2 740 414 A (DAIMLER BENZ AG) 30 April 1997 (1997-04-30)	1-3	B60R25/04 B60R25/02
Y	* the whole document *	4	
Y	DE 198 09 295 C (VALEO GMBH & CO SCHLIESSYSTEME) 12 May 1999 (1999-05-12) * column 1, line 8 - line 19 * * column 2, line 36 - column 3, line 7; figures *	4	
A	FR 2 767 767 A (SIEMENS AG) 5 March 1999 (1999-03-05) * page 4, line 27 - page 6, line 26; figures *	1	
A	EP 0 185 819 A (KOKUSAN KINZOKU KOGYO KK) 2 July 1986 (1986-07-02) * page 8, line 20 - page 9, line 4 * * page 26, line 16 - line 23; figures 6A, 6B *	4	
A	EP 0 733 526 A (VALEO SECURITE HABITACLE) 25 September 1996 (1996-09-25) * column 10, line 35 - column 12, line 5; figures 6-9 *	4	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 3 November 2000	Examiner Areal Calama, A-A
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date O : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.02 (P/M/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 11 6318

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-11-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2740414 A	30-04-1997	DE 19539852 C	02-10-1996
		GB 2306572 A, B	07-05-1997
		IT RM960723 A	23-04-1998
		JP 9301127 A	25-11-1997
		US 5808372 A	15-09-1998
DE 19809295 C	12-05-1999	NONE	
FR 2767767 A	05-03-1999	DE 19737856 A	18-03-1999
EP 0185819 A	02-07-1986	DE 3479990 D	09-11-1989
EP 0733526 A	25-09-1996	FR 2731970 A	27-09-1996

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82